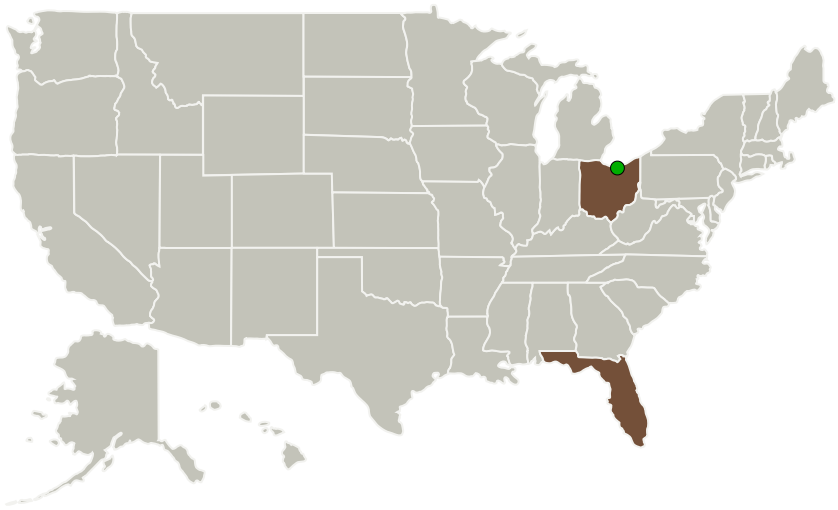
Scintillation-Hardened GPS, Phase II

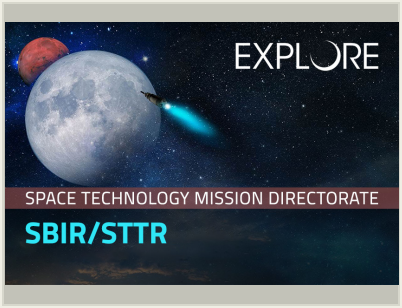
Completed Technology Project (2012 - 2015)

Project Introduction

A Space Communications and Navigation (SCaN) flight experiment will demonstrate Next Generation Navigation Techniques and Advance SDR/STRS Communications Technology to TRL-7. Scintillation-hardening techniques will be applied to an open-source waveform ported to the SCaN platform. This will result in improved GPS navigation during geomagnetic storms. The ported waveform will be STRS-compliant and open source. It will provide a validation of the STRS architecture and software defined radio technology for space applications. While operational, the waveform will autonomously detect scintillation and automatically switch into a data collection mode for relaying the GPS samples to the SCaN avionics subsystem for later transmission to White Sands. The open-source, STRS-compliant waveform software and GB of GPS scintillation data will be enduring products of the flight demonstration. The STRS infrastructure will be expanded with the STRS tool kit produced during this project. The STRS tool kit will be similar to the OSSIE tool kit for the SCA, providing automatic code generation of STRS wrappers and interfaces. An eclipse-based framework will provide drag-and-drop of components for developing STRS-compliant software.

Primary U.S. Work Locations and Key Partners





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Organizations Performing Work	Role	Type	Location
CommLargo, Incorporated	Lead Organization	Industry Women-Owned Small Business (WOSB)	Saint Petersburg, Florida
Glenn Research Center(GRC)	Supporting Organization	NASA Center	Cleveland, Ohio

Primary U.S. Work Locations	
Florida	Ohio

Project Transitions

December 2012: Project Start

November 2015: Closed out

Images

Briefing Chart
Scintillation-Hardened GPS, Phase II
(https://techport.nasa.gov/image/128945)

Organizational Responsibility

Responsible Mission Directorate:
Space Technology Mission Directorate (STMD)

Lead Organization:
CommLargo, Incorporated

Responsible Program:
Small Business Innovation Research/Small Business Tech Transfer

Project Management

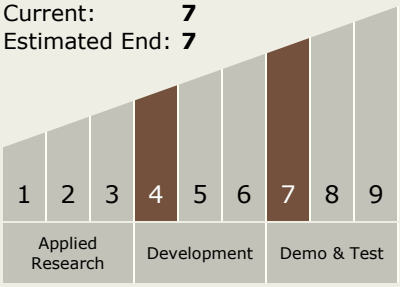
Program Director:
Jason L Kessler

Program Manager:
Carlos Torrez

Principal Investigator:
Donald Stephens

Technology Maturity (TRL)

Start: **4**
Current: **7**
Estimated End: **7**



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Technology Areas

Primary:

- TX17 Guidance, Navigation, and Control (GN&C)
  - TX17.2 Navigation Technologies
    - TX17.2.3 Navigation Sensors

Target Destinations

The Sun, Earth, The Moon, Mars, Others Inside the Solar System, Outside the Solar System